

AMENDED CLAIMS

1. (Canceled)

2. (Currently amended) The light emitting device as set forth in ~~claim 1~~ claim 8, further comprising:

a first elongated electrode arranged generally parallel with the elongated light emitting diode mesas and electrically connected to the first conductivity type layer of an elongated light emitting diode mesa disposed at one end of the plurality of elongated light emitting diode mesas; and

a second elongated electrode arranged generally parallel with the elongated light emitting diode mesas and electrically connected to the second conductivity type layer of a light emitting diode mesa disposed at an opposite end of the plurality of elongated light emitting diode mesas.

3. (Original) The light emitting device as set forth in claim 2, wherein:

the first elongated electrode is electrically connected with the corresponding first conductivity type layer at a plurality of discrete locations distributed along the long dimension of the light emitting diode mesa; and

the second elongated electrode is electrically connected with the corresponding second conductivity type layer at a plurality of discrete locations distributed along the long dimension of the light emitting diode mesa.

4. (Currently amended) The light emitting device as set forth in ~~claim 1~~ claim 8, wherein:

the electrically conductive connection material forms a substantially continuous electrical connection of the neighboring mesas along the length of the long dimension of the neighboring mesas.

5. (Currently amended) The light emitting device as set forth in ~~claim 1~~ claim 8, wherein:

the electrically conductive connection material is distributed in separate discrete portions along the length of the long dimension of the neighboring mesas.

6. (Currently amended) The light emitting device as set forth in ~~claim 1~~ claim 8, wherein the second conductivity type layer of at least one mesa of the linear array of generally parallel elongated light emitting diode mesas includes a plurality of second conductivity type layer islands, the light emitting device further including:

electrically conductive parallel connection material electrically connecting the plurality of second conductivity type layer islands, the electrically conductive parallel connection material being electrically isolated from the first conductivity type layer.

7. (Currently amended) The light emitting device as set forth in ~~claim 1~~ claim 8, wherein the second conductivity type layer of at least one of the plurality of elongated light emitting diode mesas has a patterned lateral distribution that promotes current spreading in the layer.

8. (Currently amended) ~~The~~ A light emitting device as set forth in ~~claim 1~~, wherein comprising:

an electrically insulating substrate;

a plurality of elongated light emitting diode mesas disposed generally parallel to one another on the substrate, the mesas being electrically isolated from one another, each light

emitting diode mesa defined by a stack of layers including a first conductivity type layer disposed between the substrate and a second conductivity type layer and further including ~~includes~~ at least one of:

an active region disposed between the first conductivity type layer and the second conductivity type layer, and

a buffer layer disposed between the substrate and the first conductivity type layer; and

electrically conductive connection material disposed on the substrate between neighboring elongated light emitting diode mesas, the conductive material electrically connecting the first conductivity type layer of one mesa with the second conductivity type layer of the neighboring mesa along the long dimension of the neighboring elongated mesas to series-interconnect the light emitting diode mesas.

9. (Currently amended) The A light emitting device ~~as set forth in claim 1,~~ comprising:

an electrically insulating substrate;

a plurality of elongated light emitting diode mesas disposed generally parallel to one another on the substrate, the mesas being electrically isolated from one another, each mesa defined by a stack of layers including a first conductivity type layer disposed between the substrate and a second conductivity type layer; and

electrically conductive connection material disposed on the substrate between neighboring elongated light emitting diode mesas, the conductive material electrically connecting the first conductivity type layer of one mesa with the second conductivity type layer of the neighboring mesa along the long dimension of the neighboring elongated mesas to series-interconnect the light emitting diode mesas;

wherein the electrically insulating substrate includes~~[[;]]~~ electrically conductive substrate material~~[[;]]~~ and an electrically insulating layer electrically isolating the plurality of

elongated light emitting diode mesas and the electrically conductive connection material from the electrically conductive substrate material.

10. (Currently amended) ~~The A~~ light emitting device ~~as set forth in claim 1~~, wherein comprising:

an electrically insulating substrate;

a plurality of elongated light emitting diode mesas disposed generally parallel to one another on the substrate, the mesas being electrically isolated from one another, each mesa defined by a stack of layers including a first conductivity type layer disposed between the substrate and a second conductivity type layer; and

electrically conductive connection material disposed on the substrate between neighboring elongated light emitting diode mesas, the conductive material electrically connecting the first conductivity type layer of one mesa with the second conductivity type layer of the neighboring mesa along the long dimension of the neighboring elongated mesas to series-interconnect the light emitting diode mesas, the electrically conductive connecting material conducts electrical current flow between each pair of neighboring elongated light emitting diode mesas in an electrical current flow direction that is substantially transverse to the long dimension of the elongated light emitting diode mesas.

11. (Canceled)

12. (Currently amended) ~~The A~~ light emitting semiconductor device die ~~as set forth in claim 11~~, further comprising:

an electrically insulating substrate;

a plurality of series-interconnected light emitting diode mesas disposed on the substrate;

n-type and p-type electrodes electrically connecting with the plurality of series-interconnected light emitting diode mesas;

an insulating layer disposed over at least a portion of the plurality of series-interconnected light emitting diode mesas;

electrical bonding pads disposed on the insulating layer, the electrical bonding pads electrically connecting with the n-type and p-type electrodes through gaps in the insulating layer, the electrical bonding pads having a larger area than the corresponding n-type and p-type electrodes; and

one or more thermally conductive bonding pads thermally communicating with the plurality of series-interconnected light emitting diode mesas, the one or more thermally conductive bonding pads being electrically isolated from the n-type and p-type electrodes.

13. (Canceled)

14. (Currently amended) The light emitting semiconductor device die as set forth in ~~claim 13~~ claim 15, wherein ~~each light emitting diode mesa is elongated in a direction of elongation transverse to the linear direction of the linear arrangement, an~~ the elongation aspect ratio of the light emitting diode mesas is elongation being greater than 7:1.

15. (Currently amended) ~~The~~ A light emitting semiconductor device die ~~as set forth in claim 13,~~ wherein comprising:

an electrically insulating substrate;

a linear arrangement of light emitting diode mesas disposed on the substrate, each light emitting diode mesa is being elongated in a direction of elongation transverse to the linear direction of the linear arrangement, an elongation aspect ratio of the elongation being greater than 3:1;

electrical series interconnections disposed on the substrate between neighboring light emitting diode mesas of the linear arrangement, the series interconnections interconnecting the light emitting diode mesas in series to form a series-interconnected linear arrangement of light emitting diode mesas; and

first and second electrodes electrically connecting at opposite ends with the series-interconnected linear arrangement of light emitting diode mesas, the linear arrangement of light emitting diode mesas extending in the linear direction between the first and second electrodes.

16. (Original) The light emitting semiconductor device die as set forth in claim 15, wherein each electrical series interconnection includes:

a plurality of discrete connections distributed along the direction of elongation and electrically connecting the neighboring light emitting diode mesas.

17. (Original) The light emitting semiconductor device die as set forth in claim 15, wherein each electrical series interconnection includes:

an elongated electrically conductive strip oriented parallel to the direction of elongation of the neighboring elongated light emitting diode mesas, the elongated electrically conductive strip being substantially co-extensive with the elongated side of the neighboring mesas.

18. (Original) The light emitting semiconductor device die as set forth in claim 15, wherein each electrode comprises:

a plurality of electrodes distributed along the long side of the adjacent elongated light emitting diode mesa and electrically connecting with said adjacent elongated light emitting diode mesa.

19. (Currently amended) The light emitting semiconductor device die as set forth in ~~claim 13~~ claim 15, wherein at least one light emitting diode mesa of the linear arrangement of light emitting diode mesas comprises:

a plurality of light emitting diode sub-mesas electrically connected in parallel.

20. (Currently amended) The light emitting semiconductor device die as set forth in ~~claim 13~~ claim 15, further comprising:

one or more thermal conductors disposed on the linear arrangement of light emitting diode mesas between the first and second electrodes, the thermal conductors adapted to conduct heat from the linear arrangement of light emitting diode mesas to an associated mounting surface when the light emitting semiconductor device die is flip-chip die-attached to said associated mounting surface.

21. (Currently amended) The light emitting semiconductor device die as set forth in ~~claim 13~~ claim 15, further comprising:

a plurality of series-interconnected linear arrangements of light emitting diode mesas distributed along a direction transverse to the linear direction of the linear arrangements, the first and second electrodes electrically connecting at opposite ends with each of the series-interconnected linear arrangements of light emitting diode mesas, the linear arrangements of light emitting diode mesas lying between the first and second electrodes.

22-25. (Canceled)

26. (New) The light emitting device as set forth in claim 10, further comprising:

a first elongated electrode arranged generally parallel with the elongated light emitting diode mesas and electrically connected to the first conductivity type layer of an

elongated light emitting diode mesa disposed at one end of the plurality of elongated light emitting diode mesas; and

a second elongated electrode arranged generally parallel with the elongated light emitting diode mesas and electrically connected to the second conductivity type layer of a light emitting diode mesa disposed at an opposite end of the plurality of elongated light emitting diode mesas.

27. (New) The light emitting device as set forth in claim **26**, wherein:

the first elongated electrode is electrically connected with the corresponding first conductivity type layer at a plurality of discrete locations distributed along the long dimension of the light emitting diode mesa; and

the second elongated electrode is electrically connected with the corresponding second conductivity type layer at a plurality of discrete locations distributed along the long dimension of the light emitting diode mesa.

28. (New) The light emitting device as set forth in claim **10**, wherein:

the electrically conductive connection material forms a substantially continuous electrical connection of the neighboring mesas along the length of the long dimension of the neighboring mesas.

29. (New) The light emitting device as set forth in claim **10**, wherein:

the electrically conductive connection material is distributed in separate discrete portions along the length of the long dimension of the neighboring mesas.

30. (New) The light emitting device as set forth in claim **10**, wherein the second conductivity type layer of at least one mesa of the linear array of generally parallel elongated

light emitting diode mesas includes a plurality of second conductivity type layer islands, the light emitting device further including:

electrically conductive parallel connection material electrically connecting the plurality of second conductivity type layer islands, the electrically conductive parallel connection material being electrically isolated from the first conductivity type layer.

31. (New) The light emitting device as set forth in claim **10**, wherein the second conductivity type layer of at least one of the plurality of elongated light emitting diode mesas has a patterned lateral distribution that promotes current spreading in the layer.